

Notice of Allowability

Application No.	Applicant(s)
08/737,319	KAJIWARA ET AL.
Examiner	Art Unit
Kathleen M Kerr	1652

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. This communication is responsive to 2/27/04.
2. The allowed claim(s) is/are 9 and 13-19.
3. The drawings filed on _____ are accepted by the Examiner.
4. Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some* c) None of the:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

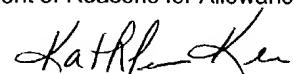
* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached 1) hereto or 2) to Paper No./Mail Date _____.
 - (b) including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
7. DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. Notice of References Cited (PTO-892)
2. Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____
4. Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. Notice of Informal Patent Application (PTO-152)
6. Interview Summary (PTO-413),
Paper No./Mail Date _____.
7. Examiner's Amendment/Comment
8. Examiner's Statement of Reasons for Allowance
9. Other _____.



Kathleen M Kerr
Examiner
Art Unit: 1652

DETAILED ACTION

Application Status

1. In response to the previous Office action, a non-Final rejection (mailed on October 28, 2003), Applicants filed a response and amendment received on February 27, 2004. Said amendment cancelled Claim 12, amended Claim 9, and added new Claims 13-16. Thus, Claims 9 and 13-16 are pending in the instant Office action and will be examined herein.

Priority

2. As previously noted, the instant application is granted the benefit of priority for the foreign application 51234/1995 filed in Japan on March 10, 1995. Receipt is acknowledged of papers submitted under 35 U.S.C. § 119(a)-(d), which papers have been placed of record in the file.

A translation of said foreign application was filed on June 13, 2003; said application discloses the claimed invention. Thus, for purposes of the instant Office action, the effective filing date of the pending claims is March 10, 1995.

Drawings

3. As previously noted, drawings filed on August 7, 2003 have been approved by the Draftsmen and are, therefore, entered as formal drawings acceptable for publication upon the identification of allowable subject matter.

Withdrawn - Objections to the Specification

4. Previous objection to the specification because the title is not descriptive is withdrawn by virtue of Applicants' amendment to the title.

Withdrawn - Claim Rejections - 35 U.S.C. § 112

5. Previous rejection of Claim 9 under 35 U.S.C. § 112, first paragraph, written description, is withdrawn by virtue of Applicants' amendment to include exact SEQ ID NOs in the claim.
6. Previous rejection of Claims 9-10 under 35 U.S.C. § 112, second paragraph, as being indefinite for the abbreviation "IPP" is withdrawn by virtue of Applicant's amendment removing said abbreviation from the claims entirely.

Withdrawn - Claim Rejections - 35 U.S.C. § 103

7. Previous rejection of Claims 9 and 12 under 35 U.S.C. § 103(a) as being unpatentable over Yamano *et al.* in view of Anderson *et al.* and in view of Albrecht *et al.* is withdrawn by virtue of Applicant's amendment limiting the IPP isomerase gene used to that which encodes SEQ ID NOs: 1 or 2 (not 3 for which the previous rejection was set forth).

Additionally Cited References

8. The following are cited to complete the record as noted:
 - a) USPNs 6,524,811 and 6,642,021 are cited as cases related to USPN 5,744,341 noted previously in prosecution (see Office action mailed November 16, 1998). The same is true of WO 99/63055.

EXAMINER'S AMENDMENT

9. An Examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 C.F.R. § 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Stephen Bent on May 24, 2004.

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Amendments to the Specification

10. The specification has been amended as follows:

a) On pages 15-16, replace the descriptions of Figures 4-9 with the following:

--- Figures 4 and 5 show the coding nucleotide sequence of the IPP isomerase gene (SEQ ID NO:4) and the amino acid sequence (SEQ ID NO:1) of the polypeptide encoded by said gene of Phaffia rhodozyma, the astaxanthin-producing yeast. In the Figure, the sequence from mark A to B shows the open reading frame encoding the polypeptide consisting of 251 amino acids.

Figures 6 and 7 show the coding nucleotide sequence of the IPP isomerase gene (SEQ ID NO:5) and the amino acid sequence (SEQ ID NO:2) of the polypeptide encoded by said gene of Haematococcus pluvialis, the astaxanthin-producing green alga. In the Figure, the sequence from mark C to D shows the open reading frame encoding the polypeptide consisting of 259 amino acids.

Figures 8 and 9 show the coding nucleotide sequence of the IPP isomerase gene (SEQ ID NO:6) and the amino acid sequence (SEQ ID NO:3) of the polypeptide encoded by said gene of Saccharomyces cerevisiae, the yeast for laboratory use. In the Figure, the sequence from mark E to F shows the open reading frame encoding the polypeptide consisting of 288 amino acids.---

Amendments to the Claims

11. The claims been amended as follows:

a) Rewrite Claims 9 and 13-16 as follows:

--9. A method for producing carotenoids comprising:

- a) transforming a DNA molecule containing a nucleotide sequence that encodes a polypeptide comprising the amino acid sequence set forth in SEQ ID NO:1 or SEQ ID NO:2 into a carotenoid-producing microorganism,
- b) culturing said transformed microorganism, and
- c) obtaining carotenoids in the culture broth or cells.

13. An isolated and purified DNA molecule comprising a nucleotide sequence encoding SEQ ID NO:1, which is the amino acid sequence of isopentenyl pyrophosphate isomerase from *Phaffia rhodozyma*.

14. An isolated and purified DNA molecule comprising a nucleotide sequence encoding SEQ ID NO:2, which is the amino acid sequence of isopentenyl pyrophosphate isomerase from *Haematococcus pluvialis*.

15. An isolated polypeptide comprising the amino acid sequence set forth in SEQ ID NO:1.

16. An isolated polypeptide comprising the amino acid sequence set forth in SEQ ID NO:2.---

b) Add new Claims 17-19 as follows:

- 17. An isolated and purified DNA molecule according to Claim 13, wherein said nucleotide sequence comprises SEQ ID NO:4.
- 18. An isolated and purified DNA molecule according to Claim 14, wherein said nucleotide sequence comprises SEQ ID NO:5.
- 19. A method according to Claim 9, wherein said nucleotide sequence comprises SEQ ID NOs:4 or 5.---

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Conclusion

12. Claims 9 and 13-19, as amended by the Examiner above, are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kathleen M Kerr whose telephone number is (571) 272-0931. The examiner can normally be reached on Monday through Friday, from 9:00am to 6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ponnathupura Achutamurthy can be reached on (571) 272-0928. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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